REMARKS

Reconsideration of the application as amended is requested.

Applicants request a one month extension of time for responding to the outstanding Office Action, and a separate petition to this effect is enclosed.

Applicants note with appreciation the Examiner's indication that claims 2-5, 9-12 and 16-20 contain allowable subject matter.

Claims 1-7 were objected to because claim 1 contained a grammatical error. Accordingly, "proving" was replaced with the term "providing".

Claims 1-20 were rejected under 35 U.S.C. §112, second paragraph as being indefinite. Applicants note that the term "capabilities" is discussed extensively in the specification as filed, and numerous examples of coordinator subsystem capabilities and actuator control subsystems are provided. In view of the numerous examples and description, it is believed that these terms would be readily understood by one skilled in the art. With reference to paragraph 36 of the present application, the control system of the present invention enhances the performance of the vehicle by distributing commands from the vehicle motion control subsystem 12 to the coordinator subsystems 16 based upon the physical capabilities of the actuator control subsystems 26. With reference to paragraph 38, the capabilities of each coordinator subsystem 16 are a combination of all of the capabilities of the actuator control subsystems 26 functionally located under each coordinator subsystem 16 as determined by the data of the vehicle state measurements and measurements from actuator state estimators communicating with each actuator control subsystem 26. For example, a first one of the coordinator subsystems 16 can be the drive train and brakes coordinator subsystem 20 determining that it is capable of providing up to 3.0 Newton meters of braking wheel torque as measured by a combination of the braking wheel torque capabilities of the actuator control subsystems 26 communicating with the drive train and brake coordinator system 20. Although the drive train and brakes coordinator subsystem 20 is used in this example, the coordinator subsystem 16 in step 64 (Figs. 5A and 5B) could be any of the coordinator subsystems 16. The coordinator subsystems 16 output their capabilities to the vehicle motion control subsystem 12 at step 66. Paragraph 39 further describes how the capabilities of the coordinator

subsystems 16 are utilized to control the vehicle. The vehicle motion control subsystem 12 preferably sends out demand signals that do not require the coordinator subsystem 16 to perform up to their full capabilities. The demand signals sent to each coordinator subsystem 16 depend on the capabilities of the coordinator subsystem 16 and/or the capabilities of the other coordinator subsystems 16. The demand signal sent to a first coordinator subsystem 16, when more than one demand signal is calculated, will depend on the demand signal sent to a second coordinator subsystem 16, which depends on the capabilities of second coordinator subsystem 16.

Various examples concerning specific capabilities are given in the specification. In addition to the braking wheel torque capability discussed above, paragraph 39 discusses the maximum Newton meters of yaw torque that the steering coordinator subsystem 18 is capable of. Paragraph 42 discusses another example in which a level and control subsystem 46 determines that it is capable of providing up to 3.0 Newtons of vertical force as determined by the load of the vehicle (a vehicle state measurement) and possible air input into an air-suspension level-control system (an actuator state measurement). As discussed in paragraph 43, after the actuator control subsystems 26 have determined their capabilities, each actuator control subsystem 26 will output a capability signal to the suspension coordinator subsystem 22 communicating the capabilities of each actuator control subsystem 26 at step 208 (Fig. 6). Paragraph 45 describes how the physical capabilities of the actuator control subsystem 26 are functionally located below the drive train and brakes coordinator subsystem 22. Paragraph 46 discusses an example wherein a first actuator control subsystem 26 is an engine control subsystem 36 that determines it is capable of providing up to 3.0 Newton meters of wheel torque as determined by the speed of the vehicle (a vehicle state measurement) and fuel input into the engine (an actuator state measurement).

In view of the extensive discussion and numerous examples in the present application, Applicants submit that the terms "actuator capabilities" and "coordinator capabilities" would be readily understood by one skilled in the art, and are therefore clear and definite. Applicants note that "The Examiner's focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. §112, second paragraph is whether the claim meets

the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available. When the Examiner is satisfied that patentable subject matter is disclosed . . . he or she should allow claims which define the patentable subject matter with a reasonable degree of particularity and distinctiveness." MPEP 2173.02.

In the Office Action of June 25, 2003, claims 1, 6-8 and 13-15 were rejected under 35 U.S.C. §102(b) as being anticipated by Sigl U.S. Patent No. 5,794,735. Applicants respectfully submit that this rejection is improper, and therefore should be withdrawn.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, *arranged as in the claim.*" *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added). In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a prima facie case of anticipation based upon the prior art. *In re Sun*, 31 USPQ 2d 1451, 1453 (Fed. Cir. 1993) (unpublished). Applicants respectfully assert that the Examiner has not yet met her burden of establishing a prima facie case of anticipation with respect to the rejected claims.

Claim 1 defines a method of controlling a vehicle including, among other things, inputting an intended driving demand to a vehicle motion control subsystem, the intended driving demand requesting a vehicle behavior modification, proving a plurality of coordinator subsystems, providing at least one actuator control subsystem for each coordinator subsystem, outputting actuator capabilities of the at least one actuator control subsystem to an associated one of the plurality of coordinator subsystems, outputting coordinator capabilities of each coordinator subsystem to the vehicle motion control subsystem, calculating at least one coordinator demand signal with the vehicle motion control subsystem, the at least one coordinator demand signal being determined according to the coordinator capabilities and the intended driving demand, outputting the at least one coordinator demand signal to at least one of the coordinator subsystems, calculating at least one actuator demand signal with each of the at least one of the coordinator subsystems, the at least one actuator demand signal being determined according to the actuator capabilities and the at least one coordinator demand signal outputted to the at least one of the coordinator subsystems, and outputting the at least one

actuator demand signal to the at least one actuator control subsystem, wherein a combination of each at least one actuator demand signal provides directions for the at least one actuator control subsystem to perform the vehicle behavior modification of the intended driving demand.

As discussed above and in the specification of the present application, the capabilities of the actuators and the coordinator subsystem are input into a vehicle motion control subsystem, and an actuator demand signal is outputted to at least one actuator control subsystem. Applicants submit that in the present application the terms "actuator capabilities" and "coordinator capabilities" relate to information that is utilized by the vehicle motion control subsystem to provide an actuator demand signal. The present application provides numerous examples of possible actuator capabilities of actuator control subsystems and of coordinator capabilities of coordinator subsystems utilized in controlling a vehicle. Applicants respectfully submit that Sigl does not disclose or suggest the method of controlling a vehicle as set forth in claim 1.

Claims 6-8 depend from claim 1, and are therefore believed to be allowable for those reasons set forth above with respect to claim 1.

Claim 8 defines a vehicle control system including, among other things, a vehicle motion control subsystem having a control input and a control output, the control input communicating an intended driving demand to the vehicle motion control subsystem, the intended driving demand requesting a vehicle behavior modification, a plurality of coordinator subsystems, each coordinator subsystem including a coordinator input and a coordinator output, each coordinator subsystem communicating coordinator capabilities of the coordinator subsystem to the system input of the vehicle motion control subsystem, and at least one actuator control subsystem for each coordinator subsystem, each actuator control subsystem having an actuator output communicating actuator capabilities of the actuator control subsystem to the coordinator input of an associated one of the plurality of coordinator subsystems, wherein the vehicle motion control subsystem calculates at least one coordinator demand signal, the at least one coordinator demand signal being determined according to the coordinator capabilities and the intended driving demand, wherein the vehicle motion control subsystem outputs the at least one coordinator demand signal to the coordinator input of at

least one of the coordinator subsystems, wherein each coordinator subsystem calculates at least one actuator demand signal, the at least one actuator demand signal being determined according to the actuator capabilities and the at least one coordinator demand signal outputted to the at least one of the coordinator subsystems, wherein each coordinator subsystem outputs the at least one actuator demand signal to at least one actuator control subsystem, and wherein a combination of each at least one actuator demand signal provides directions for the at least one actuator control subsystem to perform the vehicle behavior modification of the intended driving demand.

Applicants respectfully submit that Sigl '735 does not disclose or suggest a vehicle control system as recited in claim 8. More specifically, Sigl '735 does not disclose or suggest anything regarding capabilities of a coordinator subsystem. Sigl '735 also does not disclose or suggest outputting capabilities of a subsystem or calculating signals according to the capabilities of a subsystem. As discussed above in connection with claim 1, the vehicle control system of the present application utilizes coordinator capabilities of coordinator subsystems, and actuator capabilities to provide at least one actuator demand signal. Thus, the vehicle control system utilizes information concerning the physical capabilities of the subsystems to provide a demand signal. Sigl '735 does not disclose or suggest such an arrangement.

Claims 13 and 14 depend from claim 8, and are therefore believed to be allowable for those reasons set forth above with respect to claim 8.

Claim 15 defines a method of controlling a vehicle including, among other things, receiving at least one driver input from a driver of the vehicle, providing at least one active assist program having at least one active input, the at least one active assist program having an on setting wherein the at least one active assist program outputs at least one active input and an off setting wherein the at least one active assist program does not output at least one active input, inputting an intended driving demand for implementing a vehicle behavior modification into a vehicle motion control subsystem, proving an implementation subsystem, and outputting at least a portion of the intended driving demand from the vehicle motion control subsystem to the implementation subsystem, wherein the intended driving demand is derived from a combination of the at least one driver input and the at least one active input if the at least one

active assist program is in the on setting and if the driver of the vehicle does not overrule the at least one active assist program, otherwise the intended driving demand is derived from the at least one driver input.

The prior art of record does not disclose or suggest the above noted features of claim 15. Specifically, the Sigl '735 patent does not disclose an intended driving demand derived from a combination of at least one driver input and at least one active input if an at least one active assist program is in an on setting and if the driver of the vehicle does not overrule the at least one active assist program, otherwise the intended driving demand is derived from the at least one driver input. According to claim 15, the intended driving demand can only be derived from (1) a combination of the at least one driver input and the at least one active input, if the at least one active assist program is in the on setting and if the driver of the vehicle does not overrule the at least one active assist program or (2) the at least one driver input. However, the Sigl '735 patent discloses directions to the device 14 wherein the operating control element 44 overrules the signal in the output line 12 even if the driver controls the engine output by actuating the gas pedal above the maximum speed set by the operating control element 44. Therefore, in this situation, any active assist program is in the on setting and the driver of the vehicle overrules the at least one active assist program. However, in this situation, any intended driving demand is not derived from at least one driver input. The intended driving demand is derived from the single output of the operating control element 44. Accordingly, claim 15 is in condition for allowance.

Applicants have added new claims 21 and 22. In general, new claim 21 corresponds to original claim 1, and new claim 22 corresponds to original claim 8. However, the phrase "actuator capabilities" has been replaced with the term "information concerning limitations". Also, the term "coordinator capabilities" has been replaced with the term "information coordinator limitations". These changes are not believed to alter the scope of these claims, and are only being presented in an effort to clarify the present invention. As discussed above, the present specification describes numerous examples of information concerning the actuator control subsystems 26 and the coordinator subsystems, and how this information is utilized by

the vehicle control subsystem to provide an actuator demand signal. Applicants respectfully submit that the cited references do not disclose or suggest any such arrangement.

Applicants have made a concerted effort to the place the present application in condition for allowance, and a notice to this effect is earnestly solicited. In the event there are any remaining informalities, the courtesy of a telephone call to the undersigned attorney would be appreciated.

Respectfully submitted,

ERIK COELINGH ET AL.

By: Price, Heneveld, Cooper, DeWitt & Litton

10/27/03
Date

Jeffrey S. Kapteyn
Registration No. 41 883
695 Kenmoor, S.E.
Post Office Box 2567
Grand Rapids, Michigan 49501
(616) 949-9610

JSK/cmu